Chemical Constituents Tested In Bench-Scale Tests

Bench-Scale Test 1 (200 μg/L; 21°C)			
Aluminum	Calcium	Lead	Nickel
Arsenic	Chromium	Magnesium	Potassium
Barium	Copper	Manganese	Sodium
Cadmium	Iron	Mercury	Zinc
Bench-Scale Test 2 (100 μg/L; 21°C)			
1,1,1,2-Tetrachloroethane	1,2-Dichloropropane	Chlorobenzene	n-Propylbenzene
1,1,1-Trichloroethane	1,3,5-Trimethybenzene	Chloroethane	Naphthalene
1,1,2,2-Tetrachlorethane	1,3-Dichlorobenzene	Chloroform	o-Xylene
1,1,2-Trichlroethane	1,3-Dichloropropane	Chloromethane	p-Isopropyltoluene
1,1-Dichloroethane	1,4-Dichlorobenzene	cis-1,2-Dichloroethene	sec-Butylbenzene
1,1-Dichloroethene	2,2-Dichloropropane	Dibromochloromethane	Styrene
1,1-Dichloropropene	2-Chlorotoluene	Dibromomethane	tert-Butylbenzene
1,2,3-Trichlorobenzene	4-Chlorotoluene	Dichlorodifluoromethane	Terachloroethene
1,2,3-Trichloropropane	Benzene	Ethylbenzene	Toluene
1,2,4-Trichlorobenzene	Bromobenzene	Hexachlorobutadiene	trans-1,2-Dichloroehene
1,2,4-trimethylbenzene	Bromochloromethane	Isopropylbenzene	Trichloroethene
1,2-Dibromo-3-chloropropane	Bromodichloromethane	m-Xylene	Trichlorofluoromethane
1,2-Dibromoethane	Bromoform	p-Xylene	Vinyl chloride
1,2-Dichlorobenzene	Bromomethane	Methylene chloride	
1,2-Dichloroethane	Carbon tetrachloride	n-Butylbenzene	
Bench-Scale Test 3 (1-600 mg/L; 21°C)			
Alkalinity/Bicarbonate *(50-500 mg/L)*	Chloride *(100 mg/L)*	Fluoride *(1 mg/L)*	Silica *(2-25 mg/L)*
Bromide *(1 mg/L)*	Dissolved organic carbon (sodium benzoate) *(5 mg/L)*	Nitrate as N *(3 mg/L)*	Sulfate *(20-600 mg/L)*
Bench-Scale Test 4 (30-100 μg/L; 10°C and 21°C)			
All compounds tested in bench-scale test 2 *(30 μg/L)*		methyl tert-butyl ether *(100 μg/L)*	
Bench-Scale Test 5 (30-100 μg/L; 21°C)			
Methane	Sulfide		
Bench-Scale Test 6 (10-200 μg/L; 10°C and 21°C)			
All elements tested in Bench-Scale Test 1		Selenium	Tin
Antimony	Molybdenum	Silver	Vanadium
Bench-Scale Test 7 (100 μg/L; 10°C and 21°C)			
Sulfide			

Equilibrium was reached in dialysis samplers within:

- 1 to 3 days for arsenic, aluminium, potassium, sodium, and selenium,
- 3 to 7 days for barium, calcium, cadmium, chromium, copper, iron, magnesium, manganese, nickel, lead, vanadium, and zinc, and
- 28 days or more for mercury, silver, and tin,

at temperatures tested (10 ^{o}C and 21 ^{o}C). The effect of temperature was small but observable in that some cations and trace elements took longer to equilibrate (1 day compared to 3 days or 3 days compared to 7 days) when tested at 10 ^{o}C compared to 21 ^{o}C. In all cases, except for mercury, silver, and tin, equilibration of cations and trace elements was achieved within one week. In addition, it was found that cations and trace elements present at high concentrations tended to equilibrate slightly faster than when they were present at low concentrations. However, all cations and trace elements, except mercury, sliver, and tin, equilibrated within one week at all concentrations tested.

The reasons mercury, silver, and tin did not equilibrate within the same time frame as all the other cations and trace elements tested are uncertain. All three were severely affected by the colder test temperature (10 ^{o}C). These metals are known to form complexes with humic and fulvic acids present in natural waters. It is possible that these complexes take longer to diffuse through the dialysis membrane. Organic complexes would be expected to move slower than smaller ions at reduced temperatures. Because of long equilibration times, mercury, silver, and tin were not evaluated in the field comparisons.

Cations and trace elements were not detected in the blanks, indicating that there was no desorption of these elements from the dialysis membrane. Coefficients of variation for triplicate analyses of water from the dialysis sampler were <6% for most cations and trace elements tested. Only silver, iron, and mercury had higher variations, 5-7%, 6-10%, and 14-17%, respectively.

Equilibrium was reached in dialysis samplers within

- 1 to 3 days for 59 VOCs tested.

The VOCs were compounds included in the USEPA SW-846 8260B analysis, including MTBE. The effect of temperature was slight in that most VOCs equilibrated in one day at 21 ^{o}C and in three days at 10 ^{o}C. Decreasing the concentrations of VOCs from 100 μg/L to 25 μg/L did not affect the equilibration time of VOCs in the dialysis samplers. No desorption of VOCs was found from any of the dialysis sampler blanks. Coefficients of variation of triplicate analyses of water from the dialysis sampler for 51 of the 59 VOCs were less than 5%. All VOCs had coefficients of variation less than 18%.